

power for each terminal is generated by a circuit configuration similar to that shown in FIG. 5 including circuit components 401-i, 402-i, 403, 404 and 405-i.

On the other hand, from the signal-to-noise ratio SN-id ($i=1, 2, \dots, N-1$) of the received signal, a second weighting function of transmission power for each terminal is generated by a circuit configuration including circuit components 601-i, 602, 603-i and 604-i. In this circuit, the power control signal SN-id ($i=1, 2, \dots, N-1$) separated by each modem 105i ($i=1, 2, \dots, N-1$) is inputted to a low pass filter 601-i ($i=1, 2, \dots, N-1$). After more radio frequency variation than needed is removed therein, the difference between the power control signal SN-id and a desired signal-to-noise ratio outputted from a comparator 603-i ($i=1, 2, \dots, N-1$) is derived. For each terminal, the difference between the actual signal-to-noise ratio and the desired signal-to-noise ratio is integrated by an integrator 604-i.

By making the second weighting function act on the first weighting function as a correction value, the transmission power specifying signal PW-i ($i=1, 2, \dots, N-1$) of each terminal is derived. At this time, the time constant of the low pass filter 601-i is set to a value sufficiently larger than that of the low pass filter 401-i.

In the case of this embodiment, both of open loop control and closed loop control are performed. Even if there is some nonlinearity in the transmission system, the signal-to-noise ratio of each terminal is controlled so as to coincide with the desired signal-to-noise ratio.

According to each of the above described embodiments, there is a possibility that the transmission power for a terminal becomes very small when the terminal is located near the base station and the signal receiving state from the base station is very good. Such a phenomenon can be avoided by setting a threshold indicating the lower limit value of the transmission power and exercising control so as to keep the transmission power from becoming the threshold or less.

I claim:

1. A transmission power control method in a spread spectrum communication system for performing communication using spectrum spreading between a base station and terminals, comprising the steps of:

performing, in said base station, spread spectrum modulation on a pilot signal and a transmission signal addressed to each terminal by using first and second orthogonal codes selected from among a plurality of orthogonal codes which are orthogonal to each other and except a specific orthogonal code assigned to power control;

measuring, in each terminal, a signal-to-noise (S/N) ratio on the basis of a value of a noise component obtained by de-spreading an antenna-received signal with said specific orthogonal code and a value of a signal component obtained by de-spreading the antenna-received signal with said first orthogonal code assigned to the pilot signal, and transmitting a power control signal depending upon a result of said measuring to the base station; and

controlling, in said base station, power of a transmission signal to be distributed to each terminal according to the power control signal received from each terminal.

2. A transmission power control method according to claim 1, wherein each of said terminals transmits information indicating a value of said measured signal-to-noise ratio to the base station as said power control signal.

3. A transmission power control method according to claim 1, wherein each of said terminals transmits informa-

tion indicating a difference between a value of said measured signal-to-noise ratio and a predetermined signal-to-noise ratio value to the base station as said power control signal.

4. A transmission power control method according to claim 1, wherein in response to the power control signal received from each of said terminals, said base station controls the power of said transmission signal for each terminal so as to make the signal-to-noise ratio values of terminals nearly equal.

5. A transmission power control method according to claim 1, wherein in response to the power control signal received from each of said terminals, said base station controls the power of said transmission signal for each terminal so as to keep the signal-to-noise ratio values of said terminals nearly equal.

6. A transmission power control method according to claim 1, wherein in response to the power control signal received from each of said terminals, said base station controls the power of said transmission signal for each terminal so as to reduce a total transmission power for the plurality of terminals.

7. A transmission power control method according to claim 1, wherein said base station transmits the transmission signal with a predetermined lower limit power to each terminal when a value of the power of the transmission signal determined on the basis of the power control signal received from the terminal base station transmits a signal to said terminal with power is lower than said lower predetermined limit power.

8. A mobile terminal for performing communication with a base station by using spectrum spreading, said base station performing spectrum modulation on a pilot signal and a transmission signal for said mobile terminal by using first and second orthogonal codes, respectively, said first and second codes being selected from among a plurality of orthogonal codes except a specific orthogonal code assigned to power control, said mobile terminal comprising:

first means for measuring a signal-to-noise ratio value on the basis of a value of a noise component obtained by de-spreading an antenna-received signal with said specific orthogonal code and a value of a signal component obtained by de-spreading the antenna-received signal with said first orthogonal code assigned to the pilot signal;

second means for transmitting a power control signal produced depending upon a result of said measuring to the base station; and

third means for reproducing the transmission signal transmitted for the mobile terminal by de-spreading the antenna-received signal with said second orthogonal code assigned to the mobile terminal.

9. A mobile terminal according to claim 8, wherein said second means transmits information indicating a value of the signal-to-noise ratio value measured by said first means to the base station as said power control signal.

10. A mobile terminal according to claim 8, comprising: means for deriving a difference between the signal-to-noise ratio value measured by said first means and a reference signal-to-noise ratio value; and

said second means transmitting information indicating said difference to the base station as said power control signal.

11. A mobile terminal according to claim 8, wherein said second means comprises means for spreading said power control signal with a unique spreading code assigned to said terminal, thereby to transmit said